

acc gag gcc cag aag ggc ttt cag gat gtg gag gcc cag gcc gcc acc 292  
Thr Glu Ala Gln Lys Gly Phe Gln Asp Val Glu Ala Gln Ala Ala Thr  
75 80 85 90

tgc aac cac act gtg atg gcc cta atg gct tcc ctg gat gca gag aag 340  
 Cys Asn His Thr Val Met Ala Leu Met Ala Ser Leu Asp Ala Glu Lys  
 95 100 105  
 gcc caa gga caa aag aaa gtg gag gag ctt gag gga gag atc act aca 388  
 Ala Gln Gly Gln Lys Lys Val Glu Glu Leu Glu Gly Glu Ile Thr Thr  
 110 115 120  
 tta aac cat aag ctt cag gac gcg tct gca gag gtg gag cga ctg aga 436  
 Leu Asn His Lys Leu Gln Asp Ala Ser Ala Glu Val Glu Arg Leu Arg  
 125 130 135  
 aga gaa aac cag gtc tta agc gtg aga atc gcg gac aag aag tac tac 484  
 Arg Glu Asn Gln Val Leu Ser Val Arg Ile Ala Asp Lys Lys Tyr Tyr  
 140 145 150  
 ccc agc tcc cag gac tcc agc tcc gct gcg gcg ccc cag ctg ctg att 532  
 Pro Ser Ser Gln Asp Ser Ser Ser Ala Ala Ala Pro Gln Leu Leu Ile  
 155 160 165 170  
 gtg ctg ctg ggc ctc agc gct ctg ctg cag tgagatccca ggaagctggc 582  
 Val Leu Leu Gly Leu Ser Ala Leu Leu Gln  
 175 180  
 acatcttggga aggtccgtcc tgctcggctt ttcgcttgaa cattcccttg atctcatcag 642  
 ttctgagcgg gtcattggggc aacacgggta gcgggggagag cacggggtag ccggagaagg 702  
 gcctctggag caggtctgga gggggccatgg ggcagtctctg ggtctgggga cacagtcggg 762  
 ttgaccagg gctgtctccc tccagagcct ccctccggac aatgagtcct ccctcttgctc 822  
 tcccaccctg agattgggca tgggggtgcgg tgtggggggc atgtgctgcc tgttggtatg 882  
 ggtttttttt gcggggggggg ttgctttttt ctgggggtctt tgagctccaa aaaaataaac 942  
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 gggcgccgc c 1013

&lt;210&gt; 2

&lt;211&gt; 180

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 2

Met Ala Ser Thr Ser Tyr Asp Tyr Cys Arg Val Pro Met Glu Asp Gly  
 1 5 10 15  
 Asp Lys Arg Cys Lys Leu Leu Leu Gly Ile Gly Ile Leu Val Leu Leu  
 20 25 30  
 Ile Ile Val Ile Leu Gly Val Pro Leu Ile Ile Phe Thr Ile Lys Ala  
 35 40 45  
 Asn Ser Glu Ala Cys Arg Asp Gly Leu Arg Ala Val Met Glu Cys Arg  
 50 55 60

Asn Val Thr His Leu Leu Gln Gln Glu Leu Thr Glu Ala Gln Lys Gly  
 65 70 75 80  
 Phe Gln Asp Val Glu Ala Gln Ala Ala Thr Cys Asn His Thr Val Met  
 85 90 95  
 Ala Leu Met Ala Ser Leu Asp Ala Glu Lys Ala Gln Gly Gln Lys Lys  
 100 105 110  
 Val Glu Glu Leu Glu Gly Glu Ile Thr Thr Leu Asn His Lys Leu Gln  
 115 120 125  
 Asp Ala Ser Ala Glu Val Glu Arg Leu Arg Arg Glu Asn Gln Val Leu  
 130 135 140  
 Ser Val Arg Ile Ala Asp Lys Lys Tyr Tyr Pro Ser Ser Gln Asp Ser  
 145 150 155 160  
 Ser Ser Ala Ala Ala Pro Gln Leu Leu Ile Val Leu Leu Gly Leu Ser  
 165 170 175  
 Ala Leu Leu Gln  
 180

<210> 3  
 <211> 39  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Synthetic  
 forward primer

<400> 3  
 tttctcgaga tgagacgcta caagctcttt ctcatgttc

39

<210> 4  
 <211> 97  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Synthetic  
 forward primer

<400> 4  
 atgagacgct acaagctctt tctcatgttc tgtatggccg gcctgtgcct catctccttc 60  
 ctgcattct tcaagaccct gtcctatgtc accttc 97

<210> 5  
 <211> 100  
 <212> DNA  
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
forward primer

<400> 5

cctgtcctat gtcaccttcc cacgagaact ggctccctc agccctaacc tgggtgccag 60  
ctttttctgg aacaatgccc cggtcacgcc ccaggccagc 100

<210> 6

<211> 102

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
forward primer

<400> 6

cggtcacgcc ccaggccagc cctgagccag gaggccctga cctgctgcgt accccactct 60  
actcccactc gccctgctg cagccgctgc cgcccagcaa gg 102

<210> 7

<211> 93

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
forward primer

<400> 7

agccgctgcc gccagcaag gcggccgagg agctccaccg ggtggacttg gtgctgcccg 60  
aggacaccac cgagtatttc gtgcgcacca agg 93

<210> 8

<211> 98

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
forward primer

<400> 8

gtatttcgtg cgcaccaagg ctggaggcgt ctgcttcaaa cccggcacca agatgctgga 60  
gagaccgcct ccgggacgac cggaggagaa gcctgagg 98

<210> 9

<211> 83

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
forward primer

<400> 9

accggaggag aagcctgagg gggccaacgg atcctcggcc cggcgaccac cccggtacct 60  
cctgagcgcc cgggagcgca cgg 83

<210> 10

<211> 104

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
forward primer

<400> 10

gagcgcccgg gagcgcacgg ggggccgagg tgcacgacgc aagtgggtgg agtgcgtgtg 60  
tctgcccgga tggcacggac ccagctgcgg cgtgccact gtgg 104

<210> 11

<211> 84

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
forward primer

<400> 11

agctgccccg tgcccactgt ggtgcagtat tccaacctgc ctaccaagga gcggctgggtg 60  
cccagggagg tgccgcgccg cgtc 84

<210> 12

<211> 99

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
forward primer

<400> 12

agggagggtgc cgcgcgcgt cattaatgct atcaacgtca accacgagtt cgacctgctg 60  
gacgtgcgct tccacgagct gggcgacgtg gtggacgcc 99

<210> 13

<211> 101

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
forward primer

<400> 13

tgggagacgt ggtggacgcc tttgtggtgt gcgagtccaa cttcacggct tatggggagc 60  
cgcgggccgct caagttccgg gagatgctga ccaatggcac c 101

<210> 14

<211> 63

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
forward primer

<400> 14

agatgctgac caatggcacc ttcgagtaca tccgccacaa ggtgctctat gtcttcctgg 60  
acc 63

<210> 15

<211> 70

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
forward primer

<400> 15

gctctatgtc ttcttgacc actttcctcc tggaggacga caagatggat ggatcgccga 60  
cgactacctg 70

<210> 16

<211> 37

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
reverse primer

<400> 16

tttaagctta ctagacttcc gcctcgcca gttttcc 37

<210> 17

<211> 109

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
reverse primer

<400> 17  
 ctagacttcc gcctcgtcca gttttccccc agcaggcggg cttccttcag gacccctgtg 60  
 ggcgcatacct cccgcagccg tgctcctggg ctctcggtag gggttgtcc 109

<210> 18  
 <211> 102  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Synthetic  
 reverse primer

<400> 18  
 ggctcctggg aggggttgct cagaaggtag tggaaccggg cgtagttctt cagcaggtag 60  
 ttgggcgcac acatgtgctc gctgggggtc gcaggcggg ac 102

<210> 19  
 <211> 104  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Synthetic  
 reverse primer

<400> 19  
 ctgggggtctg caggcgggta ctcttgctgc gtgccgtcga accagccccc ggtgcggatc 60  
 aggccgcgga tgtagttcag gtcccgcttg tcctcgtagt cacc 104

<210> 20  
 <211> 101  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Synthetic  
 reverse primer

<400> 20  
 ccgcttgctc tcgtagtcac cccagcgtgg gaagtcgcca ttctgggcgg acacgagctt 60  
 gaagtagatg ccctcgggcg tgaagcacca ggagcagtgc c 101

<210> 21  
 <211> 102  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Synthetic  
 reverse primer

<400> 21  
 tgaagcacca ggagcagtgc cagccggcga agtgaagggg gctgcccagc gaccactgca 60  
 ccaggatgtg tccggtgcgg ttctcatact gtctgaagtt gg 102

<210> 22  
 <211> 99  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Synthetic  
 reverse primer

<400> 22  
 ctcatactgt ctgaagttgg gcatggtgta gtattggcgg cggcgcaggc ggatgccgtc 60  
 cagcccatac actgcctgca gcatgtccac cgtgcagcc 99

<210> 23  
 <211> 100  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Synthetic  
 reverse primer

<400> 23  
 agcatgtcca ccgtgcagcc tgacaccacc tccaggggtgc ccggttgctt ccaaagaat 60  
 ccgtagagcg acgtgcgcat gtggaaggcg aagggtcgg 100

<210> 24  
 <211> 102  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Synthetic  
 reverse primer

<400> 24  
 gtggaaggcg aagggtcgg tccagccatc gtagagcttg aggaacagga cgccgtcacg 60  
 ggccgggata tcgtccgcat cgtcaatgat gaagacgtcg tc 102

<210> 25  
 <211> 91  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Synthetic  
 reverse primer

<400> 25  
 tcaatgatga agacgtcgtc gggccgcagg ttgcgcagcc gcgagacgcc gtcctgggtg 60



aggaaggtgc gcaggtagtc gtcggcgatc c

91

<210> 26

<211> 70

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
reverse primer

<400> 26

caggtagtcg tcggcgatcc atccatcttg tcgtcctcca ggaggaaagt ggtccaggaa 60  
gacatagagc 70

<210> 27

<211> 81

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
reverse primer

<400> 27

ggcgggtctct ccagcatctt ggtgccgggt ttgaagcaga cgcctccagc cttggtgagc 60  
acgaaatact cggtaggtgac c 81

<210> 28

<211> 80

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
reverse primer

<400> 28

acgaaatact cggtaggtgac ctcgggcagc accaagtcca cccggaggag ctcctcggcc 60  
gccttgctgg gcggcagcgg 80

<210> 29

<211> 68

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
reverse primer

<400> 29

tttgatccg ttggccccct caggcttctc ctccggtcgt cccggaggcg gtctctccag 60  
catcttg 68

<210> 30  
 <211> 1596  
 <212> DNA  
 <213> Homo sapiens

<400> 30  
 atgagacgct acaagctctt tctcatgttc tgtatggccg gcctgtgcct catctccttc 60  
 ctgcacttct tcaagacctt gtcctatgtc accttcccc gagaactggc ctccctcagc 120  
 cctaacctgg tgtccagctt tttctggaac aatgccccgg tcacgcccc ggccagcccc 180  
 gagccaggag gccctgacct gctgcgtacc ccactctact ccactcggc cctgctgcag 240  
 ccgctgccgc ccagcaaggc ggccgaggag ctccaccggg tggacttggg gctgcccag 300  
 gacaccaccg agtatttcgt gcgcaccaag gccggcgccg tctgcttcaa acccggcacc 360  
 aagatgctgg agaggccgcc cccgggacgg ccggaggaga agcctgagg ggccaacggc 420  
 tcctcggccc ggcgccacc ccggtacctc ctgagcgccc gggagcgcac ggggggccga 480  
 ggcgccggc gcaagtgggt ggagtgcgtg tgcctgccc gctggcacgg acccagctgc 540  
 ggcggtgcca ctgtggtgca gtactccaac ctgcccacca aggagcggct ggtgcccagg 600  
 gaggtgccgc gcccggtcat caacgccatc aacgtcaacc acgagttcga cctgctggac 660  
 gtgcgcttcc acgagctggg cgacgtggtg gacgcctttg tgggtgtgca gtccaacttc 720  
 acggcttatg gggagccggc gccgctcaag ttccgggaga tgctgaccaa tggcaccttc 780  
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 gcccgtgacg gcgtcctttt cctcaagctc tacgatgggt ggaccgagcc cttcgccttc 1020  
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 tcaggctgca cgttgacat gctgcaggca gtgtatggg tggacggcat ccgcctgcgc 1140  
 cgccgccagt actacaccat gcccaacttc agacagtatg agaaccgcac cggccacatc 1200  
 ttggtgcagt ggtcgctggg cagccccctg cacttcgccc gctggcactg ctccctggtg 1260  
 ttcacgccc agggcatcta cttcaagctc gtgtccgccc agaattggcg ctccccacgc 1320  
 tggggtgact acgaggacaa gcgggacctg aactacatcc gcggcctgat ccgcaccggg 1380  
 ggctggttcg acggcacgca gcaggagtac ccgcctgcag accccagcga gcacatgtat 1440  
 gcgcccgaat acctgctgaa gaactacgac cggttccact acctgctgga caaccctac 1500  
 caggagccca ggagcacggc ggccggcggg tggcgccaca ggggtcccga ggggaaggccg 1560  
 cccgcccggg gcaaaactga cgaggcgga gtctag 1596

<210> 31  
 <211> 1596  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Synthetic  
 mutant nucleotide sequence

<400> 31  
 atgagacgct acaagctctt tctcatgttc tgtatggccg gcctgtgcct catctccttc 60  
 ctgcacttct tcaagacctt gtcctatgtc accttcccac gagaactggc ctccctcagc 120  
 cctaacctgg tgtccagctt tttctggaac aatgccccgg tcacgcccc ggccagcccc 180  
 gagccaggag gccctgacct gctgcgtacc ccactctact ccactcggc cctgctgcag 240  
 ccgctgccgc ccagcaaggc ggccgaggag ctccaccggg tggacttggg gctgcccag 300  
 gacaccaccg agtatttcgt gcgcaccaag gctggaggcg tctgcttcaa acccggcacc 360  
 aagatgctgg agagaccgcc tccgggacga ccggaggaga agcctgagg ggccaacgga 420  
 tcctcggccc ggcgaccacc ccggtacctc ctgagcgccc gggagcgcac ggggggccga 480  
 ggtgcacgac gcaagtgggt ggagtgcgtg tgtctgccc gatggcacgg acccagctgc 540  
 ggcggtgcca ctgtggtgca gtattccaac ctgcctacca aggagcggct ggtgcccagg 600  
 gaggtgccgc gcccggtcat taatgctatc aacgtcaacc acgagttcga cctgctggac 660  
 gtgcgcttcc acgagctggg cgacgtggtg gacgcctttg tgggtgtgca gtccaacttc 720

|             |            |            |             |            |             |      |
|-------------|------------|------------|-------------|------------|-------------|------|
| acggccttatg | gggagccgcg | gccgctcaag | ttccggggaga | tgctgaccaa | tggcaccttc  | 780  |
| gagtacatcc  | gccacaaggt | gctctatgtc | ttcctggacc  | actttcctcc | tggaggacga  | 840  |
| caagatggat  | ggatcgccga | cgactacctg | cgcaccttcc  | tcacccagga | cggcgtctcg  | 900  |
| cggctgcgca  | acctgcggcc | cgacgacgtc | ttcatcattg  | acgatgcgga | cgagatcccc  | 960  |
| gcccgtgacg  | gcgtcctggt | cctcaagctc | tacgatggct  | ggaccgagcc | cttcgccttc  | 1020 |
| cacatgcgca  | cgtcgctcta | cggattcttt | tgggaagcaac | cgggcaccct | ggaggtggtg  | 1080 |
| tcaggctgca  | cggtgacat  | gctgcaggca | gtgtatgggc  | tggacggcat | ccgcctgcgc  | 1140 |
| cgccgccaat  | actacaccat | gcccacttc  | agacagtatg  | agaaccgcac | cggacacatc  | 1200 |
| ctggtgcagt  | ggtcgtggg  | cagccccctt | cacttcgccg  | gctggcactg | ctcctggtgc  | 1260 |
| ttcacgccc   | agggcatcta | cttcaagctc | gtgtccgccc  | agaatggcga | cttccccacgc | 1320 |
| tggggtgact  | acgaggacaa | gcgggacctg | aactacatcc  | gcggcctgat | ccgcaccggg  | 1380 |
| ggctggttcg  | acggcacgca | gcaagagtac | ccgcctgcag  | accccagcga | gcacatgtat  | 1440 |
| gcgccaagt   | acctgctgaa | gaactacgac | cggttccact  | accttctgga | caaccccctac | 1500 |
| caggagccca  | ggagcacggc | tgcgggagga | tggcgccaca  | ggggtcctga | aggaagaccg  | 1560 |
| cctgctcggg  | gaaaactgga | cgagggcgga | gtctag      |            |             | 1596 |